

**REMARKS**

Claims 1-6 are pending in the present application and are rejected. No new matter has been added.

**Applicants' Response to Claim Rejections under 35 U.S.C. §103**

**Claims 1-6 are rejected under 35 U.S.C. §103(a) as being unpatentable over Kilpela et al. (U.S. Patent No. 6,364,885) in view of Farris et al. (U.S. Patent No. 6,077,268) and Michael et al. (U.S. Patent No. 4,709,699).**

It is the position of the Office Action that Kilpela discloses the embodiments as claimed, with the exception of teaching (i) the device being configured to cut bone and the wire being a cutting wire, (ii) a second supporting wire, and (iii) a fastener. The Office Action relies on Michael to teach (i) and relies on Farris to teach (ii) and (iii).

Kilpela is directed at a cable tensioning device used for strengthening bones. The tensioning device is illustrated in part in Figures 1 and 2. The device includes a gripping member 1, a handle 4 and a cam body 11. The gripping member 1 attaches to a bit 32. One end of a cerclage cable 46 is connected to a crimp 36 which slides into the bit 32. The cerclage cable 46 is formed into a loop 50 around a bone, and then the second end of the cerclage cable 46 is fed through the crimp 36 again, and then is fed through the cable tensioning device, such that the second end of the cerclage cable 46 protrudes from the cam body 11 (and can be held by cam lock 12). Using the tensioning device, the loop 50 is tightened until it reaches the appropriate tightness. At this point, the cable loop 50 is locked in place. See column 4, lines 51-58. It

appears that the cable 46 is cut at some point, but Kilpela does not clarify this point. In Kilpela, the cable tensioning device is used to hold together pieces of a broken bone.

Farris is directed at a variable angle surgical cable crimp assembly and method. The assembly is illustrated in Figures 1 and 2, and includes a secure cable 10. The assembly includes a tensioning tool 17, which includes a barrel 20 including a handle 21, a scale 26 including telescoping portions 19A and 19B, and a cable claim 18. The secure cable 10 is formed into a loop, and a free end 13 is fed through a crimp assembly 14 and the tensioning tool. An other end 16 of the secure cable 10 is attached to the crimp assembly 14. As illustrated in greater detail in Figure 2, the crimp assembly 14 includes a crimp 27 attached to the other end 16 of the secure cable 10 and a crimp 28 through which the free end 13 of the secure cable 10 is fed. The crimp 28 is seated in crimp 27.

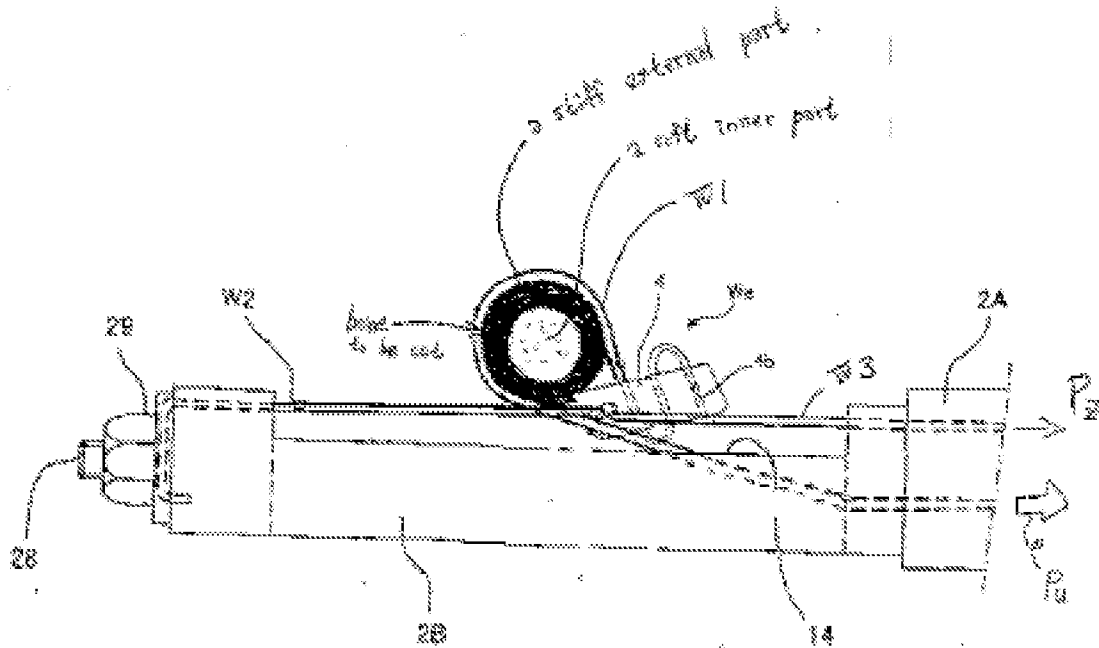
Michael is directed at surgeon's Gilgi saw. As illustrated in Figure 2, the saw includes saw blade 11, formed into a loop 12, and tube 27. The saw blade 11 is a cable 24 made up of three twisted strands 21, 22 and 23. The each of the twisted strands 21, 22 and 23 are formed from stainless steel wires 13, 14 and 15 which have circular cross-sections. The three wires, each having a circular cross-section, are changed to a strand having a square cross-section by rollers 18.

The Office Action alleges that the cerclage cable 46 of Kipela is a first supporting wire, that the loop 50 of Kilpela is a "wire" (modified by Michael to be a "cutting wire") and that the secure cable 10 of Farris is a second supporting wire. In response, Applicants respectfully submit that the combination of cited art does not disclose or suggest the embodiments as

claimed. First and most importantly, the combination of Kilpela, Farris and Michael does not disclose or suggest a device having three different wires: a cutting wire, a first supporting wire and a second supporting wire. The connection scheme of the ends of these three wires is illustrated in at least Figures 1 and 4, and is summarized in the following table:

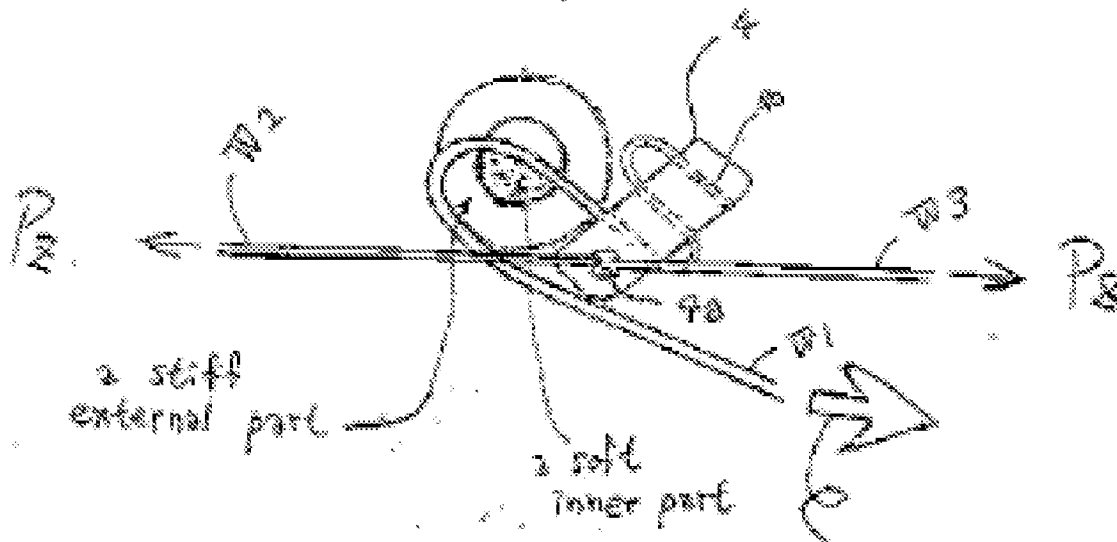
	<b>First end</b>	<b>Second end</b>
Cutting wire W1	Fixed end We attached to fastener 4	Free end 13 fixed to fixture 35
First supporting wire W2	Two free ends connected to first longitudinal end of cylindrical main portion 2 at nut 29	Looped end 8 attached to fastener 4
Second supporting wire W3	Two free ends connected to second longitudinal end of cylindrical main portion 2 at fixture 6A	Looped end 9 attached to fastener 4

For the Examiner's convenience, Applicants again explain the operation of the claimed device. Prior to cutting the bone, the first end portion of the first supporting wire W2 is connected to the nut 29 corresponding to the first longitudinal end of the cylindrical main section. See Fig. 4. The first end portion of the second supporting wire W3 is connected to the fixture 6A corresponding to the second longitudinal end of the cylindrical main section. See Figs. 1 and 2. The second end portion 8 of the first supporting wire W2 and the second end portion 9 of said second supporting wire W3 are fastened to the first hole 4a of the fastener 4. See Fig. 4. The first end portion of the cutting wire W1 is fastened to the second hole 4b of the fastener 4. See Fig. 4. The cutting wire W1 forms the circularly curved portion Wr, and a bone (not shown in Fig. 4 ) is located inside area of the circularly curved portion Wr. The device immediately prior to cutting a bone is illustrated below:



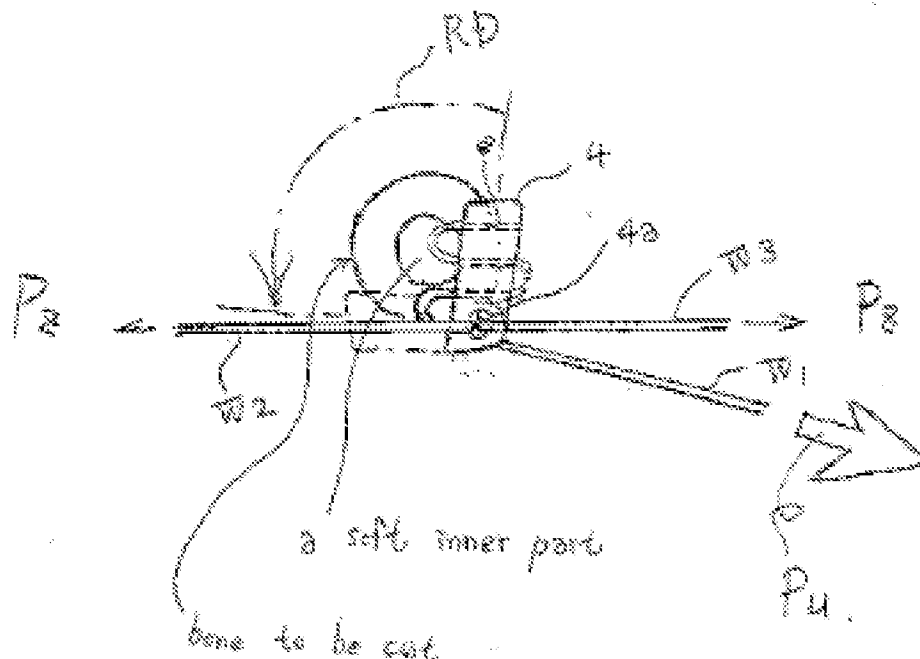
By applying a tension force  $P_u$ , which is in excess of the critical strength of the bone to be cut, a stiff external part of the bone is split off and/or broken entirely and instantly. In other words, at the moment that the tension force  $P_u$  exceeds the critical strength of the bone, the stiff external part of the bone is merely split off and/or broken entirely. However, a soft inner part of the bone is not cut yet at this moment, although the stiff external part of the bone is cut. Since the stiff external part of the bone is split off and/or broken instantly, the cutting wire  $W1$  is not used as a wire saw. Therefore, chips of the stiff external part are not generated.

After the stiff external part of the bone is split off and/or broken instantly, the circularly curved portion  $W_r$  of the cutting wire  $W1$  passes and cuts the area of the soft inner part of the bone, as illustrated below:



As mentioned in the Amendment filed on October 13, 2009, it is impossible to entirely cut the soft inner part of the bone using only the cutting wire W1.

After the circularly curved portion Wr of the cutting wire W1 has entirely passed an area of the soft inner part of the bone, by further pulling the cutting wire W1 in a direction that a tension force Pu is applied, the fastener 4 rotates in a direction RD and cuts the soft inner part of the bone clearly. Since the second end portion 8 of the first supporting wire W2 and the second end portion 9 of the second supporting wire W3 are fastened to the first hole 4a of the fastener 4 and the tension force Pz applies to the first and second supporting wires W2 and W3, the position of the first hole 4a of the fastener 4 is fixed when the fastener 4 rotates. Thus, the fastener 4 becomes a center of rotation RD. This is illustrated below:



Therefore, both the hard outer part and the soft inner part of the bone are easily and cleanly cut.

As to the merits of the rejection, each of Kilpela, Farris and Michael provide the same teaching: a single looped wire/cable. Although the Office Action interprets loop 50 of cerclage cable 46 to be a separate cable from cerclage cable 46, Kilpela only discloses a single cable. Cerclage cable 46 is looped and extends through the entire length of the tensioning device. See column 4, lines 17-25. Similarly, in Farris, a single secure cable 10 is looped and extends through the entire length of the tensioning tool 17. See column 2, line 66 to column 3, line 7. Further, as illustrated in Figure 2, Michael discloses a single saw blade cable 11 which is formed into a loop 12 and passed through tube 27.

Applicants respectfully submit that the combination of cited art merely duplicatively teaches a device which includes a single looped cable, rather than a device which includes three

distinct wires. Additionally, the combination of cited art does not disclose or suggest a fastener to which three distinct wires are attached. Furthermore, Applicants respectfully submit that there is no reason why one having ordinary skill in the art would have modified any of Kilpela, Farris and Michael to include a second or third wire as in the claimed embodiments. Applicants respectfully submit that the combination of cited art does not disclose or suggest the subject matter of claim 1 for at least this reason.

Additionally, Applicants respectfully submit that none of the cited art, either singly or in combination, includes a wire which can cut a stiff outer member cleanly together with a member which can rotate and cut a soft inner part of a bone to be cut, such that the stiff outer part and the soft inner part can both be cleanly and entirely. In Kilpela, the wire 46 is in contact with the bone 44. However, in Kilpela, if the wire 46 cuts the bone 44, a soft inner part of the bone 44 cannot be cut entirely, as described in the amendment filed on October 13, 2009. Farris discloses secure cable 10. However, in Farris, if the cable 10 cuts the bone 12, a soft inner part of the bone 12 cannot be cut entirely, as explained above. Furthermore, Michael discloses a loop 12 of saw 11. If a bone is cut by the saw 11 of Michael, chips of the stiff external part of the bone will be generated. Therefore, Applicants respectfully submit that the combination of cited art, either singly or in combination, does not disclose or suggest the subject matter of claim 1 for at least this additional reason.

Next, Applicants respectfully submit that the combination of cited art does not disclose or suggest both a pulling section and an adjusting section as claimed. The Office Action alleges that rotatable cam lock 12 of Kilpela is a “pulling section” that reduces the diameter of the loop

50, and alleges that the handle member 4 is an adjusting member which adjusts a pulling force on the second supporting wire (note that the Office Action concedes that Kilpela does not disclose a second supporting wire).

The recited “pulling section” and “adjusting section” recite functions relating to two distinct wires. However, as noted above, Kilpela only discloses a single cable. Thus, Kilpela cannot disclose a “pulling section” and an “adjusting section” as claimed. Furthermore, although rotatable cam lock 12 is alleged to be a “pulling section,” it has no functional ability to pull the cable 46. Rather, cam lock 12 “retains the cable by rotating into its horizontal position where nose 13a enters into the space 11a, with the cable also occupying the space 11a.” Column 3, lines 12-14. Therefore, the cam lock 12 cannot be a “pulling member” as claimed.

Finally, Applicants respectfully submit that each of Kilpela and Farris are directed at devices for holding bones together. In Kilpela, the device holds together two pieces of a broken bone. In Farris, the device holds a bone to a spinal rod. Meanwhile, Michael is directed at a wire for cutting bone. Applicants respectfully submit that that there is no reason why one having ordinary skill in the art would modify devices used to hold bone together by using cutting wire, thus changing the device into a device for cutting bone. This changes the principle of operation of the devices. If the proposed modification or combination of the prior art would change the principle of operation of the prior art invention being modified, then the teachings of the references are not sufficient to render the claims *prima facie* obvious. *In re Ratti*, 270 F.2d 810, 123 USPQ 349 (CCPA 1959). See MPEP 2143.01(VI).



Therefore, for at least the above reasons, Applicants respectfully submit that the combination of the cited art does not disclose or suggest the embodiment of claim 1. As to claims 2-6, Applicants respectfully submit that these claims are patentable at least due to their dependency on claim 1. Favorable reconsideration is respectfully requested.

For at least the foregoing reasons, the claimed invention distinguishes over the cited art and defines patentable subject matter. Favorable reconsideration is earnestly solicited.

If the Examiner deems that any further action by applicants would be desirable to place the application in condition for allowance, the Examiner is encouraged to telephone applicants' undersigned attorney.

Application No. 10/582,581  
Art Unit: 3775

Response  
Attorney Docket No. 062483

If this paper is not timely filed, Applicants respectfully petition for an appropriate extension of time. The fees for such an extension or any other fees that may be due with respect to this paper may be charged to Deposit Account No. 50-2866.

Respectfully submitted,  
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